

REMARKS

Claims 1-46 and 48-55 are pending in this application. Claim 47 has previously been canceled without prejudice or disclaimer. Claims 11-17, 36-41, 44, and 49-51 were previously withdrawn from further consideration by the Examiner. Claims 1 and 55 have been amended. Claims 1-10, 18-35, 42, 43, 45-48 and 52-55 have been rejected.

Claims 1 and 55 have been amended to correct minor non-substantive errors. No new matter has been added.

Applicants, by amending or canceling any claims, make no admission as to the validity of any rejection made by the Examiner against any of these claims. Applicants reserve the right to reassert the original claim scope of any claim, even if amended or canceled, in a continuing application.

In view of the following, further and favorable consideration is respectfully requested.

- I. At page 2 of the Official Action, claims 1-9, 24-30, 32-35, 42, 43, 48, 52, 53, and 55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey et al. (US 4,919,332) in view of Scott et al. (US 6,457,656).***

The Examiner asserts that "it would be obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the radial support and diaphragm of Bailey et al. with that of Scott et al. to support the stem for vertical reciprocation (col. 4, lines 40-42)."

Applicants respectfully traverse the rejections since all of the features of the presently claimed subject matter are not disclosed by the cited references.

Overview

Independent claim 1 recites [a] sprinkler, comprising:

- a housing fitted with an inlet port connectable to a water supply line and extending into an inlet chamber;

- a hollow stem member with an inlet end thereof being in flow communication with said inlet chamber and an outlet end thereof being in flow communication with an irrigation head; and

- a diaphragm seal sealingly fixed at peripheral boundaries thereof to the housing and sealingly articulated to the stem member and supporting the stem member in an essentially upright position,

- said diaphragm being deformable between a first position in which the irrigation head is retracted within the housing and a second position in which the irrigation head projects from the housing, *the stem member being radially supported to enable only sliding displacement in an axial direction from the inlet chamber towards the irrigation head without any tilt or rotation,*

- wherein the diaphragm is fully contained within the housing in both the first and second positions. (emphases added).*

Independent claim 55 recites [a] sprinkler, comprising:

- a housing fitted with an inlet port extending into an inlet chamber and comprising

- a beveled diaphragm seal having a first face thereof exposed to pressure within the inlet chamber and a second face exposed to atmospheric pressure; and

- a stem member articulated to said beveled diaphragm seal and having an inlet end thereof extending into the inlet chamber and having an outlet end articulated to an irrigation head,

- wherein the diaphragm seal is normally retained in a first toggle position where the sprinkler head is concealed within the housing,

- wherein water pressure within the inlet chamber deforms the beveled diaphragm seal into a second toggle position where the sprinkler head axially displaces and projects from the housing, *the stem member being radially supported to enable only sliding displacement in an axial direction from the inlet chamber towards the irrigation head without any tilt or rotation, and*

- wherein the diaphragm is fully contained within the housing in both the first and second toggle positions. (emphases added).*

Bailey et al. disclose a pop-up irrigation sprinkler, including a housing 2 having an internal chamber 3 containing a longitudinally movable riser 8 having a fluid passage 9 therethrough. The riser 8 is sealingly connected at the upper end thereof to the upper end of said housing 2 by means of a flexible diaphragm 16. A spring 19 is attached between the riser 8 and the housing 2.

Scott discloses a pop-up sprinkler, including a housing 10 (Figure 3) containing a cylindrical valve member 124 moving up and down within lower cylindrical retainer 132, as shown in Figure 3.

Again, the Examiner asserts that "it would be obvious to one of ordinary skill in the art ... to modify the radial support and diaphragm of Bailey et al. with that of Scott et al. to support the stem for vertical reciprocation...."

It is noted that attempting to add the lower cylindrical retainer 132 disclosed by Scott to the sprinkler of Bailey et al. would **destroy** the operation thereof. Applicant's note that MPEP § 2143.01 states that a "proposed modification ***cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference.***"

Specifically, the sprinkler of Bailey et al. includes a spring attached between the riser 8 and housing 2, as shown in Figure 1. See column 4, lines 38-48. The addition of a lower cylindrical retainer 132 of Scott to the sprinkler of Bailey et al. would mechanically interfere with the movement and operation of the spring 19 of Bailey et al., i.e., the lower cylindrical retainer would prevent compression of spring 19 and prevent full up movement of riser 8 when the sprinkler is turned on.

For comparison of structure, it is noted that the coil spring 146 in Scott is located within the cylindrical valve member 124, not the space between cylindrical valve member 124 and housing 12, so that the lower cylindrical retainer 132 does not interfere with the coil spring 146 in the sprinkler of Scott.

Further, it is noted that the riser 8 in Bailey et al. tapers inwardly at the top and outwardly at the bottom along the length thereof. Applying the lower cylindrical retainer 132 of Scott at the same position (i.e. positioned to support hinge valve member 128 in lowered position, Figure 3) in the sprinkler of Bailey et al. would not be effective to limit lateral movement of the riser 8 due to the tapering configuration of the riser 8. Specifically, the inner diameter of a lower cylindrical retainer 132 of Scott applied to the riser 8 of Bailey et al. would be located just below the annular diaphragm 16 in the sprinkler of Bailey et al., i.e., at a position of full diameter of riser 8. When the riser 8 begins to move upwardly, the riser would be unseated from the proposed lower cylindrical retainer 132 due to the inwardly tapering of the riser 8 destroying the lower cylindrical retainer 132 functioning as a guide for the riser 8.

Again, it is noted that the above-identified feature of the independent claims **requires** the stem member to be ***“radially supported.”***

It can be seen that the sprinkler in Bailey et al. has a riser 8 which is surrounded by a spring 19. Therefore, any radial support would disrupt the movement of the spring and consequently ***prevent the sprinkler from operating.*** See MPEP § 2143.01. Consequently, it is not obvious or even possible for the sprinkler of Bailey to be modified to be radially supported. See MPEP § 2143.01. Should this rejection be maintained, the Examiner is respectfully requested to address the above arguments in view of MPEP § 2143.01.

It is further noted that Bailey et al. disclose a housing 2 which is conical-shaped, and consequently different portions of the housing are spaced at different distances from the stem member.

Therefore, even if a radial support could somehow be provided to the sprinkler disclosed in Bailey et al., such radial support would have to be configured to suit the conical-shaped body and slant in a direction different to the direction of movement of the stem member. Certainly, no such slanting radial support member is disclosed by Scott.

It is further noted that it would not be obvious to one skill in the art to modify the sprinkler of Bailey et al. to include a radial support member according to the claimed combination for the following additional reasons.

- Bailey et al. disclose a specific sprinkler housing having an extremely wide top opening (See Figures. 1 and 2, between the extending lip 21);
- Bailey et al. emphasize that the invention thereof is "easy to assemble" at col. 4, line 50; col. 5, line 44.
- the extremely wide top opening of the housing is deliberately designed to allow easy insertion of the large spring 19 therein, i.e. "easy to assemble" as shown in Figure 3, and described at col. 3, lines 28-32, and col. 5, lines 30-39;
- therefore one would not modify the housing disclosed in Bailey et al. to provide radial support for the stem member thereof, since the opening of the housing is deliberately designed to be far larger than the radius of the stem member to **allow insertion** and accommodation of the spring **via rotating or pivoting the spring into the housing** (See Figure 3, the housing is adapted to surround the stem member and therefore has a much greater radius compared therewith) in the housing. Notably adding a radial support to the housing, i.e. below the opening thereof, would also not achieve the above-identified feature, since near the open operational position in Figure 2, the riser 8 is **only adjacent an upper portion** of the housing.

The proposed addition of a lower cylindrical retainer 12 of Scott to the sprinkler of Bailey et al. is not suggested, but instead these references specifically **teach away** from such modification of the sprinkler of Bailey et al.

For all of the above reasons, Bailey et al. and Scott do not teach or suggest the claimed subject matter.

In view of the foregoing, it is submitted that nothing in Bailey et al. and Scott, taken alone or together, teach or suggest the subject matter of present claims 1-9, 24-30, 32-35, 42, 43, 48, 52, 53, and 55, within the meaning of 35 USC § 103. Accordingly, the Examiner is respectfully requested to withdraw this rejection.

II. At page 7 of the Official Action, claims 18-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey et al. (US 4,919,332) in view of Scott et al. (US 6,457,656) as applied to claims 1-9, 24-30, 32-35, 42, 43, 48, 52, 53, and 55 above, and further in view of Lawson et al. (US 6,186,413).

The Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the inlet port of Bailey et al. with the filter of Lawson et al. to admit a small water flow when the sprinkler is turned off (col. 6, lines 13-14)."

In view of the following, this rejection is respectfully traversed.

Bailey et al. and Scott are discussed in detail in the above response to the rejection of the claims set forth in item I as discussed above.

Lawson et al. is cited by the Examiner as disclosing an inlet port fitted with a filter 74, as shown in Figure 2.

Again, the proposed addition of a lower cylindrical retainer 12 of Scott to the sprinkler of Bailey et al. is not suggested, but instead these references specifically ***teach away*** from such modification of the sprinkler of Bailey et al. That is, attempting to add the lower cylindrical retainer 132 of Scott to the sprinkler of Bailey et al. would ***destroy*** the operation thereof. Applicant's again note that MPEP § 2143.01 states that a "proposed modification ***cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference.***"

It is noted that Lawson discloses a lower housing element 58 cooperating with the valve member 20, as shown in Figure 2, however, this is the same or similar to the lower cylindrical retainer 132 disclosed by Scott. Lawson et al. do disclose a filter 74. However, Lawson et al. fail to teach or disclose a suitable guide for the riser 8 of Bailey et al. to teach or suggest the base combination set forth in independent claim 1 on which claims 18-22 depend.

Thus, Bailey et al., Scott, and Lawson do not teach or suggest the claimed subject matter.

In view of the foregoing, it is submitted that nothing in Bailey et al. and Scott, taken alone or together, teach or suggest the subject matter of present claims 18-22, within the meaning of 35 USC § 103. Accordingly, the Examiner is respectfully requested to withdraw this rejection.

III. At page 10 of the Official Action, claims 10, 23, and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey et al. (US 4,919,332) in view of Scott et al. (US 6,457,656) as applied to claims 1-9, 24-30, 32-35, 42, 43, 48, 52, 53, and 55 above, and further in view of Mehoudar et al. (US 6,000,634).

The Examiner asserts that “it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the sprinkler head of Bailey et al. with the boss and bushing of Mehoudar et al. to make integral the sprinkler head and cover (col. 3, lines 14-17).”

Bailey et al. and Scott are discussed in detail in the above response to the rejection of the claims set forth in item I as discussed above. Again, attempting to add the lower cylindrical retainer 132 of Scott to the sprinkler of Bailey et al. would **destroy** the operation thereof. Applicant's again note that MPEP § 2143.01 states that a “proposed modification **cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference.**”

Mehoudar et al is cited by the Examiner as teaching “wherein the sprinkler head is formed with an axial boss rotatably received within a corresponding bushing receptacle formed at a top of a bridge member articulated to the stem member.”

It is noted that Mehoudar et al. disclose a bearing pin 9b which is rotatably located in a bearing boss 10 formed integrally with and depending downwardly from a support bridge element 11. However, Mehoudar et al. fail to teach or disclose a suitable guide for the riser 8 of Bailey et al. to teach or suggest the base combination set forth in independent claim 1 on which claims 10, 23, and 31 depend.

Regarding claims 23 and 31, Mehoudar et al. is also cited by the Examiner as teaching "a differential pressure control assembly (Fig. 1, 29) comprising a differential pressure membrane received within the inlet chamber and supported adjacent the inlet end of the stem member, [w]herein said membrane deforms responsive to pressure differential between an inlet face thereof and an outlet face thereof to thereby vary a through-flow path into said inlet end of the stem (col. 4, lines 26-31)."

The Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the inlet port of Bailey et al. with the differential pressure membrane of Mehoudar et al. to supply a substantially constant flow rate (col. 4, lines 26-31)."

It is noted that Mehoudar et al. disclose a membrane 9 and recess portion 19a together defining a flow control chamber 21. However, Mehoudar et al. fail to teach or disclose a suitable guide for the riser 8 of Bailey et al. to teach or suggest the base combination set forth in independent claim 1 on which claims 10, 23, and 31 depend.

Thus, Bailey et al., Scott, and Mehoudar et al. alone or in combination do not teach or suggest the claimed subject matter.

In view of the foregoing, it is submitted that nothing in Bailey et al., Scott and Mehoudar et al., taken alone or together, teach or suggest the subject matter of present claims 10, 23 and 31, within the meaning of 35 USC § 103. Accordingly, the Examiner is respectfully requested to withdraw this rejection.

IV. Claim 45 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey et al. (US 4,919,332) in view of Scott et al. (US 6,457,656) as applied to claims 1-9, 24-30, 32-35, 42, 43, 48, 52, 53, and 55 above, and further in view of McKenzie et al. (US Pub. No. 2002/0153432).

The Examiner asserts that “it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the stem of Bailey et al. with the straighteners of McKenzie et al. to reduce turbulence in the flow passing through (paragraph 0063).”

In view of the following, this rejection is respectfully traversed.

Bailey et al. and Scott are discussed in detail in the above response to the rejection of the claims set forth in item I as discussed above. Again, attempting to add the lower cylindrical retainer 132 of Scott to the sprinkler of Bailey et al. would ***destroy*** the operation thereof. Applicant's again note that **MPEP § 2143.01** states that a “proposed modification ***cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference.***”

McKenzie et al. is cited by the Examiner as teaching “wherein the stem member is fitted, adjacent the outlet end thereof, with inwardly projection radial flow straightening fins.”

It is noted that McKenzie et al. discloses a plurality of stream straightening vanes 33 provided on shaft 33, as shown in Figure 3, however, McKenzie et al. fail to teach or disclose a suitable guide for the riser 8 of Bailey et al. to teach or suggest the base combination set forth in independent claim 1 on which claim 45 depends.

Thus, Bailey et al, Scott, and McKenzie et al. alone or in combination do not teach or suggest the claimed subject matter.

In view of the foregoing, it is submitted that nothing in Bailey et al., Scott and McKenzie et al. et al., taken alone or together, teach or suggest the subject matter of present claim 45, within the meaning of 35 USC § 103. Accordingly, the Examiner is respectfully requested to withdraw this rejection.

V. At page 12 of the Official Action, claim 54 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey et al. (US 4,919,332) in view of Scott et al. (US 6,457,656) as applied to claims 52 above, and further in view of Bethea (US 6,340,059).

The Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the sprinkler of Bailey et al. with the hook of Bethea to securely mount the sprinkler (col. 3, lines 63-65)."

In view of the following, this rejection is respectfully traversed.

Bailey et al. and Scott are discussed in detail in the above response to the rejection of the claims set forth in item I as discussed above.

Bethea is cited by the Examiner as teaching "wherein a hook is provided for suspension of the sprinkler [in] an upright position or at inverted position (Fig. 1, 30, 40)."

It is noted that Bethea discloses a first clamping element 30 and a second clamping element 40, however, Bethea fails to teach or disclose a suitable guide for the riser 8 of Bailey et al. to teach or suggest the base combination set forth in independent claim 1 on which claim 54 depends.

Thus, Bailey et al, Scott, and Bethea alone or in combination do not teach or suggest the claimed subject matter.

In view of the foregoing, it is submitted that nothing in Bailey et al., Scott and Bethea et al., taken alone or together, teach or suggest the subject matter of present claim 54, within the meaning of 35 USC § 103. Accordingly, the Examiner is respectfully requested to withdraw this rejection.

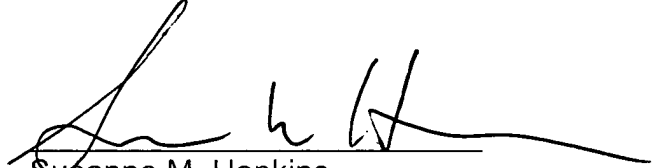
CONCLUSION

Applicants assert that the claims are in condition for immediate allowance and early notice to that effect is earnestly solicited. Should the Examiner deem that any further action by Applicants' undersigned representative is desirable and/or necessary, the Examiner is invited to telephone the undersigned at the number set forth below.

In the event this paper is not timely filed, Applicants hereby petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

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